IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Ronald COLEMAN, et al.

Serial No.: **09/634,755** Group Art Unit: **3685**

Filed: **August 8, 2000** Examiner: **WINTER, John M.**

For: **SYSTEM AND METHOD FOR ASSURING THE INTEGRITY OF DATA USED TO EVALUATE FINANCIAL RISK OR EXPOSURE**

FILED ELECTRONICALLY

U.S. Patent and Trademark Office
Customer Service Window, Mail Stop Appeal Brief - Patents
Randolph Building
401 Dulany Street
Alexandria, VA 22314

APPEAL BRIEF

Sir:

This is an Appeal Brief under 37 C.F.R. § 41.37 in response to a Final Office Action mailed on January 21, 2011, and an Advisory Action mailed on June 1, 2011. Each of the topics required by Rule 41.37 is presented herewith and is labeled appropriately. The Notice of Appeal was filed on June 16, 2011.

(1) Real Party in Interest

The real party in interest is Citibank, N.A. 399 Park Avenue New York, New York 10022.

(2) Related Appeals and Interferences

Appellant is unaware of any related appeals and interferences.

(3) Status of Claims

Claims 11-15, 17-20 and 29-42 are pending in this application and stand under final rejection. The rejection of claims 11-15, 17-20 and 29-42 is hereby appealed.

(4) Status of Amendments

There are no outstanding amendments.

(5) Summary of the Claimed Subject Matter

This summary of claimed subject matter is a concise explanation of the subject matter defined in independent claims 11, 14, 30, 35, 41 and 42. This is merely meant to be a summary and is in no way intended to limit the pending claims.

In one embodiment, as recited in claim 11, a computer-implemented method comprises (page 11, first paragraph, lines 4-8) receiving by a computer a set of input financial data (page 4, fourth paragraph and page 9, third paragraph, lines 1-4); storing by a computer one or more historical values, each historical value representing a previous set of input financial data(page 9, third paragraph, lines 4-7 and page 9, fourth paragraph, lines 1-2); performing by a computer a mathematical calculation using the information content of the input financial data and the information content of the one or more historical values (page 10, second paragraph - page 11, first paragraph and Figs. 2-6), assessing by the computer the credibility that changes to the set of input financial data are the result of one or more errors (page 14, third paragraph - page 16, first paragraph); and presenting by the computer a confidence level that a change between the information content of the input financial data and the information content of the one or more historical values is caused by an error (page 13, first paragraph, lines 3-6 and Figs. 7-8).

In another embodiment, as recited in claim 14, a system for detecting abnormalities in input financial data to a financial risk management system, the system comprises (page 9, second paragraph, lines 1-6 and Fig. 1, elements 101-104) a data processing server that receives a set of input financial data (page 9, third paragraph, lines 1-2 and Fig. 1, element 101); a computer storage device storing one or more historical values, each historical value representing a previous set of input financial data (page 9, second paragraph, lines 4-6 and Fig. 1, elements 101-104); one or more central processing units coupled to the computer storage device, the one or more central processing units mathematically calculating the information content of the one or more

historical values and the information content of the input financial data (page 9, third paragraph, lines 1-2, Fig. 1, element 101, page 10, second paragraph- page 11, first paragraph and Figs. 2-6), and mathematically calculating, based on the likelihood function, an assessment of the credibility that changes between the information content of the one or more historical values and the information content of the set of input financial data are the result of one or more errors (page 14, third paragraph - page 16, first paragraph); and a graphical user interface displaying a result based on the calculations that changes to the set of input financial data are the result of one or more errors (page 13, first paragraph, lines 3-6 and Fig. 8).

In yet another embodiment, as recited in claim 30, a computer-implemented method for identifying possible errors in financial data (page 4, fourth paragraph and page 11, first paragraph, lines 4-8), the method comprises inputting financial data (page 4, fourth paragraph and page 9, third paragraph, lines 1-4); converting by a computer the financial data to a first information content (page 7, third paragraph, lines 1-2); comparing by the computer the first information content to a second information content , wherein the second information content represents historical values of the financial data (page 14, first paragraph, lines 2-3 and page 16, first paragraph); analyzing by a computer a change between the first information content and the second information content (page 14, second paragraph - page 15, second paragraph); identifying by a computer the odds of a possible error based on the change at a predetermined statistical confidence level (page 14, third paragraph - page 15, second paragraph and Table 4); and alerting a user that the change between the first information content of the inputted financial data and the second information content of the historical values may be a possible error based on the identified odds (page 13, first paragraph, lines 3-6 and Fig. 8).

In yet another embodiment, as recited in claim 35, a method for detecting abnormalities in input data to a financial risk management system (page 4, fourth paragraph and page 11, first paragraph, lines 4-8), the method comprises (a) receiving by a computer a set of input data to a financial risk management system (page 4, fourth paragraph, page 9, third paragraph, lines 1-4); (b) receiving by the computer one or more historical values, each historical value representing a previous set of input data (page 4, fourth paragraph, page 9, third paragraph, lines 1-4); (c) calculating by the computer the likelihood that changes to the set of input data are the result of one or more errors (page 9, fourth paragraph, - page 16, first paragraph); and (d) preparing a report by the computer (page 13, first paragraph, page 14, first paragraph and Figs. 7-8); wherein

calculating the likelihood that changes to the set of input data are the result of one or more errors comprises (i) determining information content of the input data (page 7, third paragraph, lines 1-2 and page 10 second paragraph - page 11 first paragraph); (ii) performing a statistical analysis of the information content relative to the one or more historical values (page 5, paragraph 3, lines 2-5, page 7 third paragraph, lines 2-3, page 8 second paragraph); and (iii) determining the a likelihood that changes to the information content of the input data is the result of one or more errors (page 14, third paragraph - page 15, second paragraph and Table 4).

In yet another embodiment, as recited in claim 41, A method to identify potential errors in data input into a financial risk assessment process (page 4, fourth paragraph and page 11, first paragraph, lines 4-8), the method comprises determining by a computer a first value of a historical financial risk assessment data set, the first value being a function of at least an entropy of the set (page 7, third paragraph, lines 1-2, page 14, first paragraph, lines 2-3, and page 16, first paragraph); determining by the computer the first value of a current financial risk assessment data set (page 5, second paragraph, lines 1-3); determining a likelihood that the current data set is from the population of the historical data set based at least in part on the first values of the current and historical sets (page 14, third paragraph - page 15, second paragraph and Table 4); preparing a report by the computer (page 13, first paragraph, page 14, first paragraph, and Figs. 7-8); and wherein determining the likelihood comprises determining the information content of the current financial risk assessment data (page 7, third paragraph, lines 1-2 and page 10 second paragraph - page 11 first paragraph); performing a statistical analysis of the determined information content relative to the first value (page 5, paragraph 3, lines 2-5, page 7, third paragraph, lines 2-3, and page 8 second paragraph); and determining the likelihood that changes to the information content of the current data set is not the result of one or more errors (page 14, third paragraph - page 15, second paragraph and Table 4).

In yet another embodiment, as recited in claim 42, a method for determining a confidence level for a set of input data to a financial risk management system, the method comprises receiving a historical data set having a first value (page 4, fourth paragraph, page 9, third paragraph, lines 1-4); receiving a set of input data having a second value (page 4, fourth paragraph, page 9, third paragraph, lines 1-4); and mathematically determining, by a computer, a confidence level for the set of input data based upon a comparison between the first and second values, wherein the confidence level is determined using a mathematical calculation of the

likelihood that changes between the first and second values are the result of one or more errors (page 10, second paragraph - page 11, first paragraph, Figs. 2-6, and page 14, third paragraph - page 16, first paragraph).

(6) Grounds of Rejection to Be Reviewed on Appeal

A. Whether the rejection of claims 11-15, 17-20, 29-34 and 36-42 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,866,634 to Reboh et al. ("Reboh") in view of U.S. Patent No. 6,477,471 to Hedstrom et al. ("Hedstrom") and further in view of U.S. Patent No. 6,941,287 to Vaidyanathan et al. ("Vaidyanathan") is proper.

B. Whether the rejection of claims 12, 13, 34, 36 and 37 under 35 U.S.C. §103(a) as being unpatentable over Reboh in view of Hedstrom in view of Vaidyanathan and further in view of U.S. Patent No. 5,930,762 to Masch is proper.

C. Whether the rejection of claims 35, 41 and 42 under 35 U.S.C. §103(a) as being unpatentable over Reboh in view of Hedstrom further in view of U.S. Patent No. 5,396,612 to Huh and further in view of "State-value weighted entropy as a measure of investment risk," Applied Economics 1986, 18, pp. 411-419 by Nawrocki et al. ("Nawrocki") is proper.

(7) Argument

A. The rejection of claims 11-15, 17-20, 29-34 and 36-42 under 35 U.S.C. §103(a) as being unpatentable over Reboh in view of Hedstrom and further in view of Vaidyanathan is improper.

Claims 11-15, 17-20, 29-34 and 36-42 stand rejected in the Office Action under 35 U.S.C. §103(a) as being unpatentable over Reboh in view of Hedstrom and further in view of Vaidyanathan. Claim 31 is indicated as rejected under 35 U.S.C. §103(a) as being unpatentable over Reboh in view of Hedstrom and further in view of Vaidyanathan. However, in the Final Office Action, there is no discussion of claim 31 or the features recited in claim 31. On page 8, the Final Office Action discusses claim 37 in item 11. The features discussed in item 11 appear to correspond with the features recited in claim 31, not claim 37, but then there is no discussion

of claim 37. At least one of claims 31 and 37 is not rejected by the Final Office Action and is, therefore, in condition for allowance.

On page 4 of the Office Action, the Examiner concedes that Reboh does not teach performing by a computer a mathematical calculation using the information content of the input financial data and the information content of the one or more historical values and presenting by the computer a confidence level that a change between the information content of the input financial data and the information content of the one or more historical values is caused by an error, as recited in claim 11 and similarly recited in claims 14, 30, 41, and 42. The Examiner cites to Hedstrom for a recitation that:

> The operation is implemented as a workbook in three sheets. The user enters data in two sheets, the historical sheet 21 and the current sheet 23. See diagram in FIG. 3. A third sheet 27, the summary sheet, automatically summarizes the decisions made, actual observed defects, the predicted number of escaping defects, and statistical confidence intervals qualifying the "goodness" of the prediction. There is also a fourth sheet or page which contains the original computer program to calculate the Poisson probabilities.

Col. 3, lines 19-36. Hedstrom discloses in FIG. 6 and 7 a historical sheet and a current sheet. Hedstrom discloses at, *e.g.*, col. 4 lines 49-50 entering in C4:G8 of Excel 5.0 historical workbook sheet the defects for each stage. Thus, the historical data sheet of Hedstrom already contains noted defects in the software. Historical data of Hedstrom is used to predict a remaining number of defects in the software. Thus, Hedstrom cannot recently be considered to have suggested a confidence level that a change between the information content of the input financial data and the information content of the one or more historical values is caused by an error, as recited in claim 11, because the defects of Hedstrom are detected and entered by the programmers into the spreadsheets. Any change in the historical sheet of Hedstrom is caused by programmers entering the known defects into the historical sheet, not by errors in the data in the spread sheets of Hedstrom. Thus, Hedstrom would not have suggested, presenting a confidence level that a change between the information content of the input financial data and the information content of the one or more historical values is caused by an error, because Hedstrom does not assess if changes are caused by an error but merely estimates current defects based on passed defects.

In particular, the Examiner asserts that "goodness" prediction corresponds to confidence level. The "goodness" prediction of Hedstrom is merely a confidence that the number of predicted defects is accurate. Hedstrom would not have suggested a confidence level that a change is caused by an error, as recited in claim 11.

Further, the Examiner asserts that it would have been obvious to one of ordinary skill to combine the Reboh method with Hedstrom method in order to reduce the cost of error correction in databases by providing a simple and inexpensive process to ensure the quality of the data being processed. As noted above, all of the defects in Hedstrom are entered by programmers into the a historical sheet and a current sheet. Hedstrom merely estimates current defects based on passed defects. "During the development phase, actual phase containment data is captured and utilized to make the prediction of escaping defects from the finished product." *See*, *e.g.*, col. 3, lines 5-6. Thus, combining Hedstrom with Reboh will increase the cost because current errors in Hedstrom have to be found by hand and entered by hand. Moreover, the combination of Hedstrom with Reboh would not have predicted the location of errors, merely the number of errors and, therefore, would not have reduced the cost of error correction in databases, as asserted by the examiner, because the errors still have to be found. This application, however, is directed to automatically detect the likelihood that changes to the calculated information content of input data relative to historical values of information content of data, are the result of one or more errors, thus, identifying the location of a probable error to the input data. The reason for the above approach being that the quantity of input data is now so large, it is impossible for users to detect and correct all of the errors. *See*, *e.g.*, page 4, second paragraph; page 5, third paragraph. This is in contrast to Hedstrom in which known defects are in input to the spread sheets. In view of the above, it would not of been predictable to combine Hedstrom with Reboh in the manner suggested by the Examiner to render obvious the above features recited in claim 11.

In view of the above, the combination of Hedstrom with Reboh would not have suggested performing by a computer a mathematical calculation using the information content of the input financial data and the information content of the one or more historical values and presenting by the computer a confidence level that a change between the information content of the input financial data and the information content of the one or more historical values is caused by an error, as recited in claim 11. Further, the combination of Hedstrom with Reboh would not have

suggested a graphical user interface displaying a result based on the calculations that changes to the set of input financial data are the result of one or more errors, as recited in claim 14, alerting a user that the change between the first information content of the inputted financial data and the second information content of the historical values may be a possible error based on the identified odds, as recited in claim 30, determining the a likelihood that changes to the information content of the input data is the result of one or more errors, as recited in claim 41 and mathematically determining, by a computer, a confidence level for the set of input data based upon a comparison between the first and second values, wherein the confidence level is determined using a mathematical calculation of the likelihood that changes between the first and second values are the result of one or more errors, as recited in claim 42. Vaidyanathan fails to cure these deficiencies of Reboh and Hedstrom.

On page 2 of the Office Action, the Examiner asserts that Vaidyanathan's "fitness function" teaches "assessing credibility," as recited in claims 11 and 14. The Examiner cites to Vaidyanathan for a recitation that:

> The fitness function provides a measure of information-richness by examining the distribution of output states over the input feature subspace. If the output states are highly clustered and separated over this subspace, the fitness function should result in a high value as the corresponding input feature combination is doing a good job in segregating the different output states.

Col. 12, lines 50-65. The Examiner interprets the "fitness function" to represent the amount of error in a data set, so it is an assessment of the ratio of correct output from a given input and, therefore, teaches assessing the credibility.

Vaidyanathan does not teach "assessing by the computer the credibility that changes to the set of input financial data are the result of one or more errors," as recited in claim 11. Instead, Vaidyanathan is modeling outputs based upon inputs to the system. Col. 1, lines 12-17. Vaidyanathan attempts to predict the outputs for information-rich subspaces. Col. 3, lines 7-10. Vaidyanathan determines whether subspaces of identified genes are uniform, because the most uniform subspaces are most desirable and provide the most information. Col. 3, lines 21-45. Models may be used to combine subspaces to find combinations of subspaces that provide highly accurate predictions using test data. Col. 3, lines 53-60. The "fitness function" is a prediction of the accuracy of a model. Col. 3, lines 65-67. Vaidyanathan's fitness function is measuring the order within a data space. Col. 7, lines 39-42.

Vaidyanathan does not assess whether changes to the input data are the result of an error. First, Vaidyanathan does not even discuss changes to the input data. Second, Vaidyanathan does not teach that the fitness function is to determine errors in input data. The fitness function is used to predict the accuracy of a model that has an information-rich subspace. But a subspace that is not information-rich is not the result of one or more errors in the input data. Vaidyanathan does not teach that there are errors in the input data, but rather that the data may need to be transformed to create a better representation of the data. Col. 8, lines 5-10.

The Examiner's citation, reproduced above, emphasizes that the fitness function is a measure of information-richness. The fitness function is not an assessment of whether changes to the input data are the result of an error. Therefore, Vaidyanathan fails to teach "assessing by the computer the credibility that changes to the set of input financial data are the result of one or more errors," as recited in claim 11. For similar reasons, Vaidyanathan fails to teach "an assessment of the credibility that changes between the information content of the one or more historical values and the information content of the set of input financial data are the result of one or more errors," as recited in claim 14, and "alerting a user that the change between the first information content of the inputted financial data and the second information content of the historical values may be a possible error based on the identified odds," as recited in claim 30, "determining the likelihood that changes to the information content of the current data set is not the result of one or more errors," as recited in claim 41, and "mathematically determining, by a computer, a confidence level for the set of input data based upon a comparison between the first and second values, wherein the confidence level is determined using a mathematical calculation of the likelihood that changes between the first and second values are the result of one or more errors," as recited in claim 42.

Thus, Vaidyanathan fails to cure the deficiencies of Reboh and Hedstrom and Reboh, Hedstrom, and Vaidyanathan fail to teach each and every element of claims 11, 14, 30, 41, and 42. Thus, claims 11, 14, 30, 41, and 42 are believed to be allowable. Because claims 11, 14, 30, 41, and 42 are believed to be allowable, claims 12, 13, 17-20, 29, and 31-34 are also believed to be allowable. It is respectfully submitted that the rejection of claims 11-15, 17-20, 29-34 and 36-42 under 35 U.S.C. § 103(a) be withdrawn.

B. The rejection of claims 12, 13, 34, 36 and 37 under 35 U.S.C. §103(a) as being unpatentable over Reboh in view of Hedstrom in view of Vaidyanathan and further in view of Masch is improper.

Claims 12, 13, 34, 36 and 37 stand rejected in the Office Action under 35 U.S.C. §103(a) as being unpatentable over Reboh in view of Hedstrom in view of Vaidyanathan and further in view of Masch. As discussed above, Reboh, Hedstrom, and Vaidyanathan fail to teach each and every element of the independent claims. For similar reasons, Reboh, Hedstrom, and Vaidyanathan fail to teach each and every element of claims 12, 13, 34, 36, and 37, which depend on the independent claims and incorporate all of the limitations therein. Masch fails to cure the deficiencies of Reboh, Hedstrom, and Vaidyanathan. Therefore, Reboh, Hedstrom, Vaidyanathan and Masch fail to teach each and every element of claims 12, 13, 34 and 37. Thus, claims 12, 13, 34 and 37 are believed to be allowable. It is respectfully submitted that the rejection of claims 12, 13, 34 and 37 under 35 U.S.C. § 103(a) be withdrawn.

C. The rejection of claims 35, 41 and 42 under 35 U.S.C. §103(a) as being unpatentable over Reboh in view of Hedstrom further in view of Huh and further in view of Nawrocki is improper.

Claims 35, 41 and 42 stand rejected in the Office Action under 35 U.S.C. §103(a) as being unpatentable over Reboh in view of Hedstrom further in view of Huh and further in view of Nawrocki. The Examiner asserts that it would have been obvious to one of ordinary skill to combine the Reboh method with Hedstrom method in order to reduce the cost of error correction in databases by providing a simple and inexpensive process to ensure the quality of the data being processed. As noted above, all of the defects in Hedstrom are entered by programmers into the a historical sheet and a current sheet. Hedstrom merely estimates current defects based on passed defects. Thus, combining Hedstrom with Reboh will increase the cost because current errors in Hedstrom have to be found by hand and entered by hand. Moreover, the combination of Hedstrom with Reboh would not have predicted the location of errors, merely the number of errors and, therefore, would not have reduced the cost of error correction in databases, as asserted by the examiner, because the errors still have to be found. In view of the above, it

would not of been predictable to combine Hedstrom with Reboh in the manner suggested by the Examiner.

On page 3 of the Office Action, the Examiner asserts that "Huh discloses the user marking changes as spurious operational errors and storing the information in a database, [and the] Examiner submits that this teaches the claimed feature of 'determining information content of the input data.'" Huh compares copies of records, and if there are any differences, it is labeled as an error. Col. 3, line 52 - col. 4, line 67. By using the percentage of errors in the copies, Huh can provide an error rate. Col. 5, lines 1-4. But Huh does not use the "information content" of the data to determine whether there may be errors. First, Huh is identifying that there are errors, not a likelihood that a change is a result of an error. Second, Huh identifies errors by comparing a first copy (100-12) with a second copy (100-13), and a computer flags any changes that can be later reviewed by a user. Col. 3, line 64 - col. 4, line 15. So Huh's comparison of one record to another to determine changes is not using the "information content."

Moreover, Reboh, Hedstrom, Huh, and Nawrocki fail to teach "determining the a likelihood that changes to the information content of the input data is the result of one or more errors," as recited in claim 35 and similarly recited in claims 41 and 42. Indeed in an attempt to establish a prima facie case of obviousness, the Examiner does not even set forth which cited reference teaches this feature and where such a teaching can be found in the cited reference.

In Huh, any changes are flagged as a possible error. Col. 3, line 64 to col. 4, line 7. A user would then examine the contents of the flagged fields and determine whether to mark the fields as containing errors. Col. 4, line 20 to col. 4, line 38. This result is a binary decision. In contrast, in a financial risk management system, changes are not necessarily the result of an error. Huh's error rate is not the same as a likelihood or a confidence level. Huh's "error rate" determines how many errors occurred (*i.e.*, number of errors accumulated), not whether a change was a result of an error. As a result, Huh's error rate assumes that any change is a 100% chance that a change is an error.

When a record changes from one process to another, a user determines a class for that change. Col. 4, lines 20-23. *All of these changes are errors*, so the user only needs to identify the *type* of error. Col. 3, lines 28-32. For example, if an extra space has been inserted, the user would classify the error as a normalization change. Col. 3, lines 35-39. In another example, when a data processor changes the value of a data field, the user would classify the error as a

spurious-operational change. Col. 3, lines 48-49. Thus, once a change has been identified, the user classifies the change based upon what caused the change. In other words, the user looks at the cause of the error to classify the change.

Also, Huh does not teach or suggest using "input data" and "historical values." Huh analyzes data records after they have gone through processes to determine if the processes have changed the data. *See* col. 1, lines 39-65. The fields in the data records are compared to the fields of the same data records after the processes. *See* col. 3, line 64 to col. 4, line 2. So Huh recites using the <u>same</u> data record, which does not teach or suggest "input data" <u>and</u> "historical values."

Furthermore, in an Office Action mailed February 20, 2007 for U.S. Patent Application Serial No. 10/989,046, Examiner Samica Norman recognized that:

> Reboh et al. and Huh et al. fails to teach wherein calculating the likelihood that changes to the set of input data are the result of one or more errors comprises: (i) calculating the information content of the input data; and (ii) performing a statistical analysis of the calculated information content relative to the one or more historical values to determine the likelihood that changes to the input data are the result of one or more errors.

See pages 7-8. Thus, the Patent Office has recognized these deficiencies in Huh.

The Examiner does not assert Nawrocki for any portion of the rejections of claims 35, 41, and 42. Nevertheless, Nawrocki fails to cure the deficiencies of Reboh, Hedstrom, and Huh. Nawrocki is directed to estimating a level of risk for different securities, not determining whether changes to the information content of the input data is the result of errors. *See* pages 412-13. As a result, Nawrocki calculates the risk by using factors such as rate of return states to "evaluate portfolio performance." *See* pages 415-16. Nawrocki allegedly improves on previous calculations by using weighted entropy. Page 418. But by determining a "relative investment performance" of a financial portfolio, Nawrocki is not "determining the likelihood that changes to the information content of the input data is the result of one or more errors." As recited in the specification of the present application, "One embodiment of the present invention uses a data file containing the results from conventional calculations performed by a PSE Server 101 to perform Content Analysis and thus determine *whether changes in the exposure profile are likely caused by some error in the input data*." Para. [0037] (emphasis added). The present application further recites that a user can "determine if there are errors in the data that need

attention." Para. [0042]. Because Nawrocki uses the market data to correlate the reward with the risk, Nawrocki cannot teach a determination that a change to input data was a result of an error. Nawrocki is merely analyzing invested stocks to determine the risk of that investment. Indeed, Nawrocki's use of entropy is not analogous to the problem being solved by the present application.

Thus, Huh and Nawrocki fail to cure the deficiencies of Reboh and Hedstrom. and, Reboh, Hedstrom, Huh, and Nawrocki fail to teach each and every element of claims 35, 41 and 42. Thus, claims 35, 41 and 42 are believed to be allowable. It is respectfully submitted that the rejection of claims 35, 41 and 42 under 35 U.S.C. § 103(a) be withdrawn.

(8) Claims Appendix

1. - 10. (Canceled)

11. (Previously Presented) A computer-implemented method comprising:

receiving by a computer a set of input financial data;

storing by a computer one or more historical values, each historical value representing a previous set of input financial data;

performing by a computer a mathematical calculation using the information content of the input financial data and the information content of the one or more historical values, assessing by the computer the credibility that changes to the set of input financial data are the result of one or more errors; and

presenting by the computer a confidence level that a change between the information content of the input financial data and the information content of the one or more historical values is caused by an error.

12. (Previously Presented) The method of claim 11, wherein the input financial data includes data feeds from one or more data processing systems.

13. (Previously Presented) The method of claim 11, wherein the input financial data includes data calculated by a financial risk management system.

14. (Previously Presented) A system for detecting abnormalities in input financial data to a financial risk management system, the system comprising:

a data processing server that receives a set of input financial data;

a computer storage device storing one or more historical values, each historical value representing a previous set of input financial data;

one or more central processing units coupled to the computer storage device, the one or more central processing units mathematically calculating the information content of the one or more historical values and the information content of the input financial data, and mathematically calculating, based on the likelihood function, an assessment of the credibility that

changes between the information content of the one or more historical values and the information content of the set of input financial data are the result of one or more errors; and

a graphical user interface displaying a result based on the calculations that changes to the set of input financial data are the result of one or more errors.

15. (Previously Presented) The system of claim 14, wherein displaying a result includes displaying an icon indicative of calculated odds that changes to the set of input financial data are the result of one or more errors.

16. (Canceled)

17. (Previously Presented) The method of claim 11, wherein calculating the information content of the input financial data and the one or more historical values is performed by calculating the Shannon entropy of the input financial data.

18. (Previously Presented) The method of claim 11, wherein the mathematical calculation is performed using non-parametric resampling statistics.

19. (Previously Presented) The method of claim 11, wherein the mathematical calculation is performed using Bayesian statistics.

20. (Previously Presented) The method of claim 11, wherein the mathematical calculation is performed using parametric statistics.

21. - 28. (Canceled)

29. (Previously Presented) The method according to claim 11, wherein the confidence level comprises a logarithmic scale of odds ratios.

30. (Previously Presented) A computer-implemented method for identifying possible errors in financial data, the method comprising the steps of:

inputting financial data;

converting by a computer the financial data to a first information content;

comparing by the computer the first information content to a second information content, wherein the second information content represents historical values of the financial data;

analyzing by a computer a change between the first information content and the second information content;

identifying by a computer the odds of a possible error based on the change at a predetermined statistical confidence level; and

alerting a user that the change between the first information content of the inputted financial data and the second information content of the historical values may be a possible error based on the identified odds.

31. (Previously Presented) The method according to claim 30, further comprising the step of determining whether a variation in the inputted financial data is greater than a current mark to market or a maximum likely increase in value.

32. (Previously Presented) The method according to claim 30, wherein the statistical confidence level is based upon a standard deviation interval.

33. (Previously Presented) The method according to claim 30, wherein the step of alerting the user further comprises displaying an alert on a graphical user interface.

34. (Previously Presented) The method according to claim 30, further comprising the step of classifying the difference between the first information content and the second information content using a plurality of categories that correlate to odds that the difference is an error in the inputted financial data.

35. (Previously Presented) A method for detecting abnormalities in input data to a financial risk management system, the method comprising:

(a) receiving by a computer a set of input data to a financial risk management system;

(b) receiving by the computer one or more historical values, each historical value representing a previous set of input data;

(c) calculating by the computer the likelihood that changes to the set of input data are the result of one or more errors; and

(d) preparing a report by the computer;

wherein calculating the likelihood that changes to the set of input data are the result of one or more errors comprises:

(i) determining information content of the input data;

(ii) performing a statistical analysis of the information content relative to the one or more historical values; and

(iii) determining the a likelihood that changes to the information content of the input data is the result of one or more errors.

36. (Previously Presented) The method of claim 35, wherein the input data includes data calculated by a financial risk management system.

37. (Previously Presented) The method of claim 35, further comprising:

displaying a result based on the calculated likelihood that changes to the set of input data are the result of one or more errors.

38. (Previously Presented) The method of claim 37, wherein displaying the result includes displaying an icon indicative of the degree of likelihood that changes to the set of input data are the result of one or more errors.

39. (Previously Presented) The method of claim 35, wherein determining the information content of the input data is performed by calculating the Shannon entropy of the input data.

40. (Previously Presented) The method of claim 35, wherein the statistical analysis is performed using Bayesian statistics, parametric statistics, or non-parametric resampling statistics.

41. (Previously Presented) A method to identify potential errors in data input into a financial risk assessment process, the method comprising:

determining by a computer a first value of a historical financial risk assessment data set, the first value being a function of at least an entropy of the set;

determining by the computer the first value of a current financial risk assessment data set;

determining a likelihood that the current data set is from the population of the historical data set based at least in part on the first values of the current and historical sets;

preparing a report by the computer; and

wherein determining the likelihood comprises:

determining the information content of the current financial risk assessment data;

performing a statistical analysis of the determined information content relative to the first value; and

determining the likelihood that changes to the information content of the current data set is not the result of one or more errors.

42. (Previously Presented) A method for determining a confidence level for a set of input data to a financial risk management system, the method comprising:

receiving a historical data set having a first value;

receiving a set of input data having a second value; and

mathematically determining, by a computer, a confidence level for the set of input data based upon a comparison between the first and second values, wherein the confidence level is determined using a mathematical calculation of the likelihood that changes between the first and second values are the result of one or more errors.

(9) Evidence Appendix

None.

(10) Related Proceedings Appendix

None.

CONCLUSION

The undersigned representative respectfully submits that this application is in condition for allowance, and such disposition is earnestly solicited. In addition, if any additional fees are required in connection with the filing of this appeal, the Commissioner is hereby authorized to charge the same to Deposit Account 19-3140.

Respectfully submitted,

Dated: September 15, 2011

By: /Eric Sophir, Reg. No. 48,499/

Eric Sophir
Registration No. 48,499
SNR Denton US LLP
1301 K Street, NW
Suite 600, East Tower
Washington, DC 20005
(202) 408-6470